

(12) United States Patent Wang et al.

(54) MOUNTABLE TOOL COMPUTER INPUT

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See application file for complete search history.

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(56)References Cited

U.S. PATENT DOCUMENTS

| 4,712,101 | A * | 12/1987 | Culver G06F 3/0362 |
|--------------|-----|---------|-------------------------|
| | | | 345/157 |
| 6,130,666 | A * | 10/2000 | Persidsky G06F 3/0354 |
| | | | 178/19.01 |
| 9,116,560 | B1* | 8/2015 | Habash G06F 3/016 |
| 10,452,169 | B2 | 10/2019 | Wang et al. |
| 2009/0195499 | A1* | 8/2009 | Griffin G06F 3/0236 |
| | | | 345/157 |
| 2010/0085325 | A1* | 4/2010 | King-Smith G06F 3/04162 |
| | | | 345/174 |
| | | | |

(Continued)

FOREIGN PATENT DOCUMENTS

20 2421939 * 11/2011 CN

OTHER PUBLICATIONS

K. A. Bergeron et al., U.S. Appl. No. 15/691,545, filed Aug. 30,

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ABSTRACT

Computing systems and input devices can include a chassis with a computing device and an input tool with a sensor, such as a pen- or rod-like input tool, that can be positioned relative to the chassis in multiple configurations. In one configuration, the tool can be spaced away from the chassis and its sensor output can cause a first output signal in response to input provided to the sensor. In another configuration, the tool can be contacting the chassis and its sensor output can cause a second output signal in response to input provided to the sensor. For example, an input tool can be stowed in a recess of a keyboard housing or device chassis, and the input tool can produce a first output when it is in the recess and a second input when it has been removed from the chassis.

21 Claims, 12 Drawing Sheets

